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ABSTRACT

An overview of the problems of rural health delivery is presented in this booklet along with selected plans and models for delivery of services in certain rural areas of the nation. Health care is described in terms of the rural situation, insurance, rural health care systems, developing a model, and elements of the model. Thirteen models being used in various parts of the United States are presented, with implications for future development. It is noted that after adequate planning, each rural area must develop its own system. (PS)

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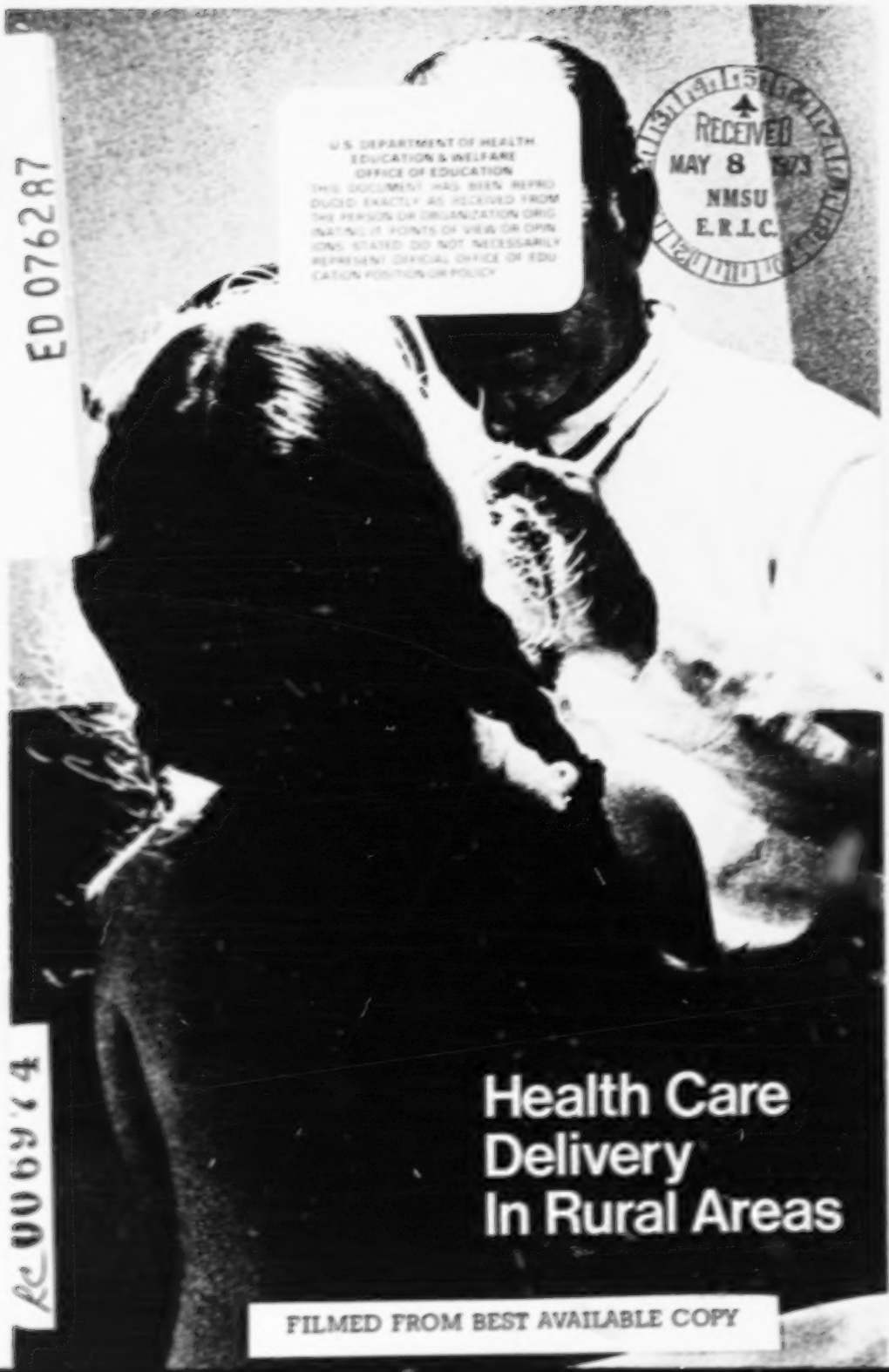

Health Care Delivery In Rural Areas

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Foreword

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This pamphlet is written for those who are concerned with the delivery of health services to all people living in rural areas. Its purpose is to present an overview of the problem as well as selected plans and models for delivery of health services in certain rural areas of the Nation. It is hoped that from such experimental models a number of plans will evolve which can be adapted and utilized by local health planning groups for their specific needs.

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American Medical Association
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Health Care Delivery In Rural Areas

The principal characteristic of change in the U.S. population since World War I has been urbanization. Urban growth from migration and natural increase has gone on apace. The rural sector has become predominantly nonfarm.

Today's farmer produces enough food for his family and about 50 other persons. As a result, although the rural population has remained at about the same level, 54 million, for the past five decades, the farm population has become a steadily smaller proportion of it. In 1920, three-fifths of the rural population was composed of farm people, by 1970 the proportion was only one-fifth. Decline in agricultural employment has accounted for continuing outmigration of the farm population. About 1,350 counties had such heavy outmigration during the 1960's that they declined in population.

THE RURAL HEALTH SITUATION

A significant number of people live in areas that can be classified as "medically underserved" in that the services of physicians and other health professionals are not available in proportion to need. However, this acknowledged shortage of services is more a function of the geographic and specialty maldistribution of medical manpower than simply one of total numbers. The problem is particularly acute in the slum and urban ghetto areas of our city, as well as in many of our rural communities.

We find that rural people in the more sparsely populated areas have only about one-half the access to physicians, nurses, dentists, hospital beds, and other health resources when compared with the rest of the Nation. The health problems of rural areas are further compounded by environmental hazards, an aging population, and a high degree of poverty. One person out of four is poor in rural districts; in the cities, one out of eight; and in the suburbs, one out of 15. About 3 million poor families live in rural areas, plus another million that are migratory or unattached to any settled rural areas.

The factors responsible for a shortage of physicians and their mal-

distribution include a variety of complex elements: socio-economic conditions, physical barriers, demographic factors, geographic location, and locational preferences of individual physicians.

In 1970, 132 counties in the U.S. had no active non-federal physicians. This represents an increase of 34 counties since 1963. The vast majority (103) of these counties are located in the western portion of the country.

Like his urban counterpart, the rural poor is unable to afford the "luxury" of health care. He recognizes only emergencies as legitimate reasons for seeking a physican and then only after exhausting the proprietary medicines and other sources of folk medicine. Dental care is reserved for pain and abscess.

The Caucasian of Appalachia, the Mexican-American of the Southwest, the Black in the deep South, and the Indian, wherever he may be, all feel alienated from the "normal" American medical system. When forced by an emergency to seek help in the usual county welfare medical institution, he is faced by regulations which he cannot fathom and attitudes of largely non-professional people who offend his pride and innate feeling of worth.

Language barriers add to the difficulty of communicating with health workers. This barrier is felt not only by the Spanish-speaking patient. The Black and the inhabitants of Appalachia may speak the words but not the "language" of middle class America.

Many of the rural poor live miles from any medically organized community. Added to isolation is the general immobility of the rural poor. Public transportation in most rural areas is limited, if present at all.

Faced by low income, the rural poor struggle to feed, clothe and house their families. Preventive medical and dentai care have no priority. General ill health is accepted as a burden to be borne. This attitude can be changed with health education, outreach case finding, and availability of health services, as demonstrated in the Migrant Health Programs, Medicaid-supported porgrams, and in rural health center programs such as the King City project in Monterey County, California.

All of the characteristics of the rural poor are found in the migrant farm worker. An estimated 1,000,000 people migrate to harvest the food and fiber produced by our farms. In addition to the previously listed barriers to services, these groups for many months of the year are transients with none of the legal rights for services available to the urban and rural poor who are stable residents in a given community. Because they work in generally isolated areas, they have little access to skilled health care services.

HEALTH INSURANCE

A significantly smaller proportion of rural residents than urban residents in the United States have health insurance coverage. Moreover, the rural population of America generally has the greater need. Several

factors contribute to the dilemma of this group and make the situation of the rural population--especially the rural poor--a significant part of today's health care problem. The income level of farm families is generally lower than urban family incomes; the incidence of chronic illness is greater because of the older age level of rural residents; non-urban people have a lower level of education and as a result are less likely to utilize advice about their health, to have periodic check-ups, and to use other health aids.

RURAL HEALTH CARE SYSTEMS

It is certain that many small communities that once had their "own" physician will never again have one. Clearly, for some rural areas, solutions completely different from the traditional "physician in residence" must be sought. In some such areas, emphasis may be needed on expanded transportation and communication capabilities, part-time use of physicians and allied health workers, improving bio-monitoring technology, use of new physician support occupations, better understanding of individual health practices, and development of emergency care and self-help methods to ensure rural health coverage.

Area-wide Planning--An alternative, in some cases, may be area-wide cooperation. Thanks to modern transportation and communications services, physicians are not needed in every hamlet, village or township. A number of communities within a trading or service area can plan together to develop health care systems on an area basis, to attract appropriate health manpower, and to provide home, clinic and hospital care. Medical resources can be consolidated in much the same way that educational services have been--if the "health services area" is carefully chosen. Some factors to consider are:

(1) Is there a sufficient population base at various age levels to warrant one or more physicians?

(2) Is the community capable of providing necessary financial resources to support personnel and facilities? (This would include eligibility for a variety of federal, state, and local funds, if the population base cannot support services on a fee-for-service basis.)

(3) Where do people travel for medical care at present?

(4) Are there readily accessible major health centers available in the larger community area?

The dimensions of a health service area within which residents can carry out integrated planning are likely to be already marked by trading or community patterns, drawn by residents as they drive to work, to shop, to school, and to recreational and cultural facilities.

Once such an area has been defined, regional planning can proceed to the questions of availability of transportation; adequate communications facilities; a thorough survey of present health status and needs, of

available funding, and personnel resources. Several of the models that follow grew out of such study, and illustrate the effectiveness of area-wide planning.

Communications and Transportation--The finest health services in the world will do no good in a community unless residents have access to them, and to services and information beyond their area. Many rural areas are plagued by poor transportation, which must be overcome not only for emergency cases but to bring the neediest patients--who are least likely to drive or own cars--to treatment. Many communities organize volunteer emergency services, similar to the VFD, when clinics are established; in some, minibuses link patients and services. Often, transportation to more distant medical centers is essential. The most elementary example might be the New Mexico Nurse Practitioner model (page 17), which depends on a daily commercial bus to deliver X-rays to a medical center 60 miles away for processing and consultation.

Communications is a broad word: It applies to the radio and direct line telephone which link that nurse practitioner in New Mexico to the medical center, as well as to the complex computer system connecting the University of Missouri School of Medicine with a rural Ozark town. Like transportation, adequate communication services are essential to the delivery of health services--to acquaint the community with programs; to conduct community health education; to link satellite clinics with central facilities; to permit consultation and exchange of information; and to provide emergency care.

Community Participation--In planning a system of comprehensive health care delivery, the greatest investment is made by those who will be served. They will provide the resources--time and money--that make it work, and eventually they will become its consumers. Their cultural base is important in determining how human and natural resources are treated. At every stage of planning and research, their cooperation is needed, to ensure an accurate view of area needs and patterns and to support the project with their ideas, their labors and funds, and their patronage.

DEVELOPING A MODEL

The AMA Council on Rural Health has developed "Guidelines for Community Organization for Health Services in Rural Areas" published to help rural communities better understand their opportunities and responsibilities and to help guide them through the maze of planning for health services. There is no one simplistic solution applicable to all medically deprived rural locales. Each area will need to develop its

own plan, incorporating those approaches most appropriate to its particular needs.

Health care must be viewed as but one subsystem within the total system of the community. In applying the community systems approach to the delivery of health services, the real concern is not simply health care or medical organization within the community, but rather organization for health care in the context of the total community, with all its objectives and problems. Coordinated planning is of primary importance, and there is an urgent need for system development with physician and hospital linkages.

Educating rural community leaders to the potential of rural development, including planning for readily available and accessible health services, can play a significant part in improving the quality of country living. To further such an educational approach, the Council on Rural Health continues to cooperate with the U.S. Department of Agriculture in an effort toward direct communication and participation of state medical associations' rural health committee chairmen with their respective USDA state rural development committees.

ELEMENTS OF A MODEL

Once again it should be emphasized that each rural area must develop its own health system, appropriate to its own needs, after adequate planning. The following list details an ideal "Rural Health System," which can be modified to serve local goals. All or most of the aspects of this "ideal system" are feasible, except in the more isolated rural areas.

I. Personnel.
   - A. Two or more physicians representing primary physician skills, e.g., family practitioner, internist, pediatrician.
   - B. Nurse, dentist, laboratory and X-ray technicians.
   - C. Health aides--recruited from local community.
   - D. Physician's assistant and/or nurse practitioner.
   - E. Public health nurse--outreach and follow up.
   - F. Social worker.
   - G. Administrator and staff.
   - H. Medical specialties, staff, visiting or by referral.

II. Services--one door for all economic levels.
   - A. Preventive, curative and rehabilitative--medical and dental.
   - B. Social services.
   - C. Transportation--to and from clinic and to referral resources.
   - D. Outreach case finding.
   - E. Home care.
   - F. Appropriate technology.
   - G. Satellite clinics.

H. Administration.
I. Evaluation and medical audit.
J. Central records, master family records, established referral and report back procedures.
K. Adequate physical facilities.
L. Emergency medical services.
M. Nutrition.

III. Community relationships.
A. Health council representing total community.
B. Community college for training aides.
C. Medical schools for referral and source of students and residents.
D. County health department.
E. Medical society.
F. Health planning agencies.
G. Citizen health education.

IV. Funding--multiple method approach.
A. Fee for service.
B. Prepaid and/or capitation.
C. Third party.
D. Sliding scale.
E. Public funding for non-reimbursable services.

Each of the models that follow incorporates some of these elements. The great variety of selections and combinations illustrates the importance of community-based design and planning.

Models

SOLO PRACTICE Despite the handicaps of rural conditions, the individual physician in solo practice still provides adequate, integrated medical care for many people. He often trains his own medical assistants and develops a helping relationship on an individual basis with members of his area and community. Usually he functions with, and has access to, expert specialists and often serves his patients by integrating these widely scattered services. Throughout our nation's history, the individual practitioner has carried on as one of the vanguards of medical care for the American family.

In a recent survey of a random sample of 1,837 physicians practicing in non-metropolitan areas of the U.S., 58 per cent were engaged in solo practice. In many areas, the need for expanded health services, including the problems of dwindling manpower, might best be served by enhancing the effectiveness of the solo practitioner--through increased access to referral services or through delegation of non-medical responsibilities to clerical and paramedical personnel.

SERVING THE "DOCTORLESS COUNTIES" Lafayette County, Florida, until recently was one of the 134 counties in the U.S. which had no resident physician. Most of these counties are sparsely settled and impoverished, and it is unlikely that many physicians will choose to reverse the migration which has left them doctorless. In the face of this fact, in 1969 the University of Florida's College of Medicine (Division of Ambulatory Medicine and Community Programs of the Department of Medicine-now the Department of Community Health and Family Medicine) chose to establish a community-oriented, comprehensive health care service in cooperation with the residents of a nearby doctorless county, Lafayette.

Lafayette County, in north central Florida, is about 60 miles from Gainesville and the University there. The Suwanee River is its easternmost border and most of the 2,800 residents live along the River bottomland. The County seat and only community of any size is Mayo, a

village of 800 people. The major industry is farming--cattle, dairy, and tobacco. There is a small boat building factory in Mayo, and 600 people work for a pulp mill in an adjacent county, the major source of employment. Median family income is approximately $2,500-3,000, and the average educational level approximately eighth grade. Four hundred Black residents live in Mayo, in an area known as "the quarters." There has been no private physician in Lafayette County for 10 years.

In Mayo, a recently constructed County health clinic, which housed the office of the County health nurse, offered ample space for the ambulatory care of all County residents and became the base of operations for the Lafayette County Health Center. The clinic was designed to serve four purposes: (1) To provide a teaching and training experience for medical and nursing students and house staff in community medicine. To be effective, this experience would have to be far enough from a medical center to have its own identity, but not so far as to make travel burdensome. Students, living and participating in a community, could see firsthand how people identify their own needs and how medicine might begin to meet those needs. (2) To furnish medical service to a community where it had not been readily available. (3) To establish for the College of Medicine a facility where the problems of getting health care to people and getting people in need of health care to health professionals may be critically studied. (4) To demonstrate the effectiveness of cooperative participation among all health professionals, patients, and community members.

Citizens of Lafayette County comprise the Community Advisory Committee, which was formed to help in the planning and operation of the clinic. They insisted upon a fee for service for those able to pay. This has helped to make the clinic self-supporting and has emphasized that the project is not directed primarily at indigents, but all residents. About two-thirds of the residents do pay for services, and the clinic is now almost self-supporting. After three years in operation, they average 7,000-8,000 visits a year, out of 2,800 residents, and have taken over the County Health Department responsibilities.

Clinic operations are streamlined to meet community and student needs: one resident in medicine, three or four medical students, senior nurses, and a public health nurse live in Mayo. They are paid a small stipend to cover additional living expenses, and they staff the clinic from 8:30 am to 9:00 pm. The resident or a faculty member is on call 24 hours a day, seven days a week. About 80 per cent of the medical students and 50 percent of nursing students rotate through this clinic experience. In addition to providing care in the clinic or at home, the resident and students write a health column for the local weekly newspaper and participate in the community by assisting science teachers in high school and giving talks to local service clubs and church groups. Faculty members supervise the project on site two to three days a week.

Gilchrist County, Florida

The Lafayette County Health Center has been so successful in meeting the needs of the community and the Medical School that the University is extending its efforts into the adjacent doctorless county of Gilchrist. In the county seat town of Trenton, the Medical School is testing the feasibility of physician's assistant delivery of primary health care with part-time physician supervision. Gilchrist County, population 3,550, is located 30 miles west of Gainesville. Agriculture is its only source of revenue, and per capita income is $1,500. Gilchrist County has no physicians, no hospital and no nursing home. Community efforts to recruit a physician have been fruitless, and in 1970 a local committee approached the Department of Community Health and Family Medicine for help in solving the problem.

Working together, the University and community residents devised a program which will deliver health care to the people and afford a testing model for the Medical School. A "local bill" passed by the Florida State legislature provided start-up funds for the purchase of an existing clinic and allocated approximately $10,000 per year for three years to subsidize operations. The bill also created the Gilchrist County Medical Board consisting of five community members appointed by the Governor. County Commissioners authorized $5,000 for medical supplies and equipment. Another State bill authorized the employment of physician's assistants, and two graduate PA's were hired. The Medical Board was expanded to include non-voting advisory members from the local Health Department, the Medical School, a correctional institution located in the County, and from outlying communities in the County not otherwise represented.

The clinic is equipped with an X-ray machine and an incubator for office bacteriology. Major laboratory tests are mailed to a clinical laboratory. An electrocardiogram is producing computer-read EKGs through a telephone link. The EKGs are reviewed by the attending physicians. Supervision of clinic activities is provided part-time daily by members of the Department of Community Health and Family Medicine, one of whom is available nights and weekends by telephone.

Clinic staff consists of two PA's and a receptionist-bookkeeper and an LPN, both residents of the County. Patients are usually seen by appointment, and nonresidents of the County are seen only in cases of emergency. Office hours are from 9:00 am to 5:00 pm, with the PA's alternating night and weekend emergency call. The PA takes a history, performs the indicated physical examination and laboratory or X-ray procedures, and either treats the problem or asks the attending physician to see the patient with him. If the attending physician is not present, but the problem can be solved by telephone, the attending physician is called. Every patient visit is reviewed by the attending physician.

The project's success depends on acceptance--by the community,

physicians and PA's--of the concept, and on the quality of treatment. After less than a year of service, the Trenton clinic seems to have gained the support of all three groups. The University plans ongoing evaluation of the system, with eventual addition of studies on quality of health care through computerized medical record data and two-way television and audio equipment, linking the clinic and the University hospital. Such a development could provide a valuable test of remote consultative teaching and supervisory functions where on-site physician activity is not possible.

OKLAHOMA'S PROJECT RESPONSIBILITY is a cooperative effort involving the University of Oklahoma's Health Sciences Center, the Oklahoma State Medical Association and other related medical organizations. The Department of Community Health of the Health Sciences Center has as its core area of teaching, research and service, "The Delivery of Health Care Services." The Department has interests in the distribution and use of health manpower, how health services are used, the production of health manpower and the curricular structure necessary to appropriately train and educate this manpower. The pilot study, Project Responsibility, started as a research and demonstration project in the area of delivery of rural health care services.

This pilot study program was designed to operate as an integral part of the University of Oklahoma Health Sciences Center teaching program. The initial design was that physicians in this project-an internist, pediatrician and general practitioner-would hold active teaching appointments at the University and would work in group practice on a fee-for-service basis. Residents in Family Practice and Preventive Medicine as well as medical students and other health professionals from the Medical Center would serve on rotation at the rural center.

The town of Wakita, Oklahoma, located 135 miles northwest of Oklahoma City, population 450, was selected as the initial site of the program. About 8500 people live within a 25 mile radius of Wakita, and before the development of the health center, no physician or medical facilities were available within approximately 40 miles. The county is predominantly agricultural with some oil production; the population is not considered "poor." The average per capita income of $4,792.00 compares favorably with the national average of $3,308.00 and the state's figure of $3,008.00. The Wakita Clinic Facility, built by the citizens of the town, houses 7 beds for acute illness and 44 beds for nursing home patients in addition to offices for three physicians and a pharmacy. Currently, one full-time family physician staffs the clinic with physician relief from the Medical Center. Population use has reached 65-75% and the fee-for-service arrangement is meeting expenses.

One satellite clinic operating 3 half-days per week in a town approximately 12 miles distant has been established and a second satellite clinic operating similarly is planned for the near future.

The University graduates its first class of Physician's Associates this year, and one student has done his preceptorship there, and plans are made for continuation of this educational association. The Wakita Clinic and its environs has also served as a site of electives for medical students and is included in the training program for dietetic interns and physical therapy students. It has also served as the site of one doctoral dissertation in the College of Health and a second dissertation level research project is currently in progress.

The clinic physician works in the community, lecturing actively in senior high school classes and contributes to adult education programs.

THE NURSE PRACTITIONER Hope Medical Center, Estancia, New Mexico. Hope Medical Center is a pilot program in rural medical care, under the sponsorship of the University of New Mexico School of Medicine, with funds from the Regional Medical Program, the Sears Foundation, and the National Center for Health Service Research and Development (HSMHA) DHEW. The project was designed to recruit and train a nurse, who would staff a clinic and provide firstline care for the community under the supervision of physicians at the Medical School.

Planning for the project involved these preliminary steps:

(1) A comprehensive survey of the health status of residents was made.

(2) A design for nurse preparation, including some instruction in nurse midwifery, was developed by heads of various departments of the Medical School. A panel of physicians determined the scope of practice for the nurse, relative to providing care, health maintenance, services in selected illnesses, and emergency care. It was agreed that at no time would the nurse make a decision that might be considered medical diagnosis, but she would make observations for the supervising physicians to consider. In selected instances, predetermined standing orders would be instituted.

(3) The respective medical and nursing practice acts were reviewed with the attorney general of the State to determine that the scope of planned practice was consistent with current requirements.

The nurse selected to staff the clinic came from a nearby town and had worked with the physician who previously served Estancia. She received approximately seven months training at the Medical School in the mechanics of medical observation and treatment, including seeing some patients under physician supervision in the emergency room during the last month. She began seeing patients in Estancia in February, 1969.

Estancia is the county seat of Torrance County; county population is about 5,000, Estancia about 800. Approximately 40 per cent of the people are Spanish-American; with a number on welfare; and the majority

have only grade school education. The principal employment is agriculture. The nearest physician resides 23 miles west of Estancia, and the nearest hospital, in a neighboring county, is supported by county taxes and reluctant to accept non-resident patients. Torrance County has limited funds for care of the needy, but some laboratory services and prenatal, well-baby and planned parenthood clinics are provided by the county health department.

Hope Medical Center was originally built for a family physician with consultation from the Sears-Roebuck Foundation's Community Medical Assistance Plan. However, it had not been staffed for several years. It was equipped with X-ray and laboratory facilities. Under the new plan, the nurse practitioner covers the center four and one-half days a week from 8:30 am to 5:00 pm; on Wednesday morning she is in Albuquerque, making rounds at the medical school, discussing any problems with physicians there, and collecting reading materials, all part of her continuing education.

The nurse practitioner performs physical examinations, X-rays, suturing, splinting, taking samples for laboratory examination, and prescribing. X-rays are bused into Albuquerque to the Medical School; EKGs are transmitted to the school directly by telephone and read there; lab work is done either by the health department or more generally by a specially-trained lab aide; prescriptions are countersigned by a physician from the medical school.

There is a direct telephone line between the center and the medical school, and a physician is always available there for telephone consultation. Two physicians from the medical school also visit the center weekly, a pediatrician on Fridays and a physician dealing with adult diseases on Tuesdays. The community has been urged to call the supervisory physicians directly on nights and weekends.

After three years in operation, the clinic has added a second nurse practitioner to provide relief for the first and to extend clinic services to families in the community. The clinic has not yet met its goal of being self-supporting on a fee-for-service basis. Currently fees are based on a unit system, at approximately two-thirds of cost; roughly one-third of the patients are on Medicaid or Medicare and the rest are billed directly. Few patients have private insurance.

The clinic experience does demonstrate the possibility of using indigenous personnel, with planned training, to offer first-line care under physician supervision.

PRESBYTERIAN MEDICAL SERVICES New Mexico. The Presbyterian Medical Services originated as a branch of the Board of National Missions of the Presbyterian Church, operating the Mission Health Services in the Southwest (primarily New Mexico and Colorado). In 1969, PMS was formed as a separate non-profit corporation, with a contractual relationship to the Presbyterian Church.

Attempting to address the problem of physician distribution in north central New Mexico and Colorado, PMS owns and/or administrates two rural hospitals, five outpatient clinics (with particular emphasis on home health and preventive medicine), and three nursing outposts, all of which (with one exception) are manned by physicians employed by the PMS Group Medical Practice. An additional program, which became operational in Feburary, 1972, focuses on delivering comprehensive health care in the northwest section of New Mexico.

The centers are located in the mountain area north of Santa Fe, in north central New Mexico, and across the border in Colorado. The total target area population numbers approximately 45,000, including a large proportion of minorities (Spanish and Indian). This population has traditionally faced a number of significant barriers to health care including low income, lack of health care resources, lack of insight on the part of the consumer as to proper access to and use of the health care delivery system, and geographic barriers.

PMS' operation is widespread and still developing. A major component is the Sangre de Cristo Comprehensive Health Care System. This OEO funded delivery system is based in Costilla County, Colorado, one of the poorest counties in the Nation, and serves approximately 6,500 residents through a program oriented toward ambulatory and preventive care. Six home-health care teams provide extensive outreach services for target area residents. This system also includes nursing outposts in Fort Garland, Colo., Costilla and Penasco, N.M., and an outpatient clinic in Questa, N.M., with plans for expansion into Manassa, Colo., and Taos, Embudo, and Mora, N.M.

Two rural hospitals (34 and 28 beds each) form a second component of the PMS system. Located in Taos and Embudo, they serve approximately 15,000 residents. Future plans involve including these hospitals in the OEO system and establishing a medical group practice in Taos.

Through the combined efforts of PMS, the Regional Medical Program, and the Four-Corners Regional Commission, an outpatient clinic was newly established to serve approximately 15,000 residents in the checkerboard area of northwest New Mexico. This clinic is oriented toward outreach programs and comprehensive health care.

The overriding purpose of the PMS operation is to establish pilot health agencies that will help regenerate communities, delegate operating responsibility and authority as that becomes possible, and then withdraw as soon as the community is ready. PMS sees the health care delivery problem as primarily one of poor distribution of physicians and services, and projects a "dispersed group" of salaried physicians --backed up by specialty services and linked by communications and transportation support--as a mechanism to provide the needed redistribution among scattered rural communities. This concept of group practice does relieve some physician distribution problems by providing adequate income and some free time.

The PMS group presently consists of ten physicians and three den-

tists who provide health care at most PMS facilities. Services include outpatient and, in the hospitals, inpatient medical care, pediatric care, obstetrics and a limited amount of surgery. Two ophthalmologists (not PMS staff) provide services at the clinics several times a month. X-ray, clinical laboratory services, and EKG are available. Most centers provide 24-hour coverage.

Consumer boards have been established at each of the PMS facilities and are becoming increasingly involved in decisions pertaining to local hospitals and clinics. Consumer boards are also being established in each of the communities in the target area to advise PMS on future development and involve residents in existing programs. Reaction of consumers toward this kind of participation has been encouraging.

All medical staff are members of the medical society, and some specialists who are not group members voluntarily provide back-up and clinic services. Supporting staff include laboratory and X-ray technicians, medical records librarians, pharmacists, dietitians, nurses and clerical workers, many of them employed in the project's hospitals. Salaries in both physician and non-physician posts are comparable with those paid elsewhere in the area.

PMS faces problems common to rural areas: transportation, staff turnover, and the lack of specialty services, aside from staff surgeon and internist. The group practice arrangement offers advantages such as salary assurance, relief, back-up, referral, ancillary staff, equipment and supplies, administrative and accounting services, which make remote rural practice more attractive. And PMS is exploring alternatives--such as establishing its own multispecialty back-up group--which would relieve some problems still faced by its staff.

LAWRENCE COUNTY, ALABAMA, in the northwest part of the State, is an ideal Appalachian county in which to test innovations in the delivery of comprehensive health care in a depressed rural area. Covering 700 square miles, devoted almost exclusively to farming, it faces low per capita income ($1,023 in 1968), underemployment, inadequate housing (68.9 per cent of the homes are considered substandard, compared to the U.S. rate of 15.9 per cent), lack of public transportation, and other comparably serious indicators of need. Its 27,000 people, 80 per cent white, are being served by five full-time physicians, two dentists, a small health department with medical services one day a week, and two hospitals totaling about 134 beds.

Obviously, medical care delivered under such pressure and in the face of such need has been entirely remedial and very limited. Statistics offer evidence that many serious health needs are either unrecognized or, of necessity, tolerated: infant death rate was 34.3 in 1969, compared with a 26.2 rate for the State. Draft rejection rate

was 67.6 per cent, and the overall death rate of 10.5 is higher than that of the State (9.0), or the U.S. (9.4).

Lawrence County illustrates the familiar interdependence of economic, educational, and health problems. Yet the county is not without resources or prospects: industry and recreational status of the population is improving; and in the health field, local and regional medical, public health, and community leaders have been working with University of Alabama officials in Birmingham, and with the Alabama Regional Medical Program to meet the health care problems in the County. The Lawrence County Health Care Project which they have developed and in which local physicians exert the largest leadership influence, was funded under the Appalachian Regional Development Act, beginning September 1, 1970, as an operating health demonstration project.

The model places strong emphasis on health education and preventive medicine, combined with a practical approach to the acute need for primary care.

A multidisciplinary team has been designed around each of four participating physicians. Each team consists of its physician leader, Medex (Physician's Assistant), a health counselor (locally trained social caseworkers), a public health nurse, and two aides. In addition, two environmentalists and one nutritionist are shared by the teams. The team structure is intended to (1) provide a broader approach to health related problems of a larger number of people; (2) make effective outreach possible; (3) allow for delegation of tasks, (4) provide an advocate relationship with recipients for needed change in community resources; (5) realistically reflect and address the complex interrelationship of community problems and needs.

The model has two components of patient contact: first, an "in office" component (physician, Medex, and health counselor); second, an Outreach Team. The Outreach Teams serve a variety of functions including casefinding, assessment, (nursing, nutrition, home environment, and others), treatment (health education, counselling, assistance with safety and sanitation problems, nutrition education, programs for medications, assistance with child care or transportation, and others), and follow through to assure that planned treatment and reevaluation is completed.

Most patients are first seen when they come to a physician's office, a hospital, or to the health department for assistance. In the process of meeting the presenting problem, which is usually done by one or more "in office" team members according to the physician's direction, a growing number of families are being shown to have complex and long standing problems, which demand careful planning by the full team. Such problems are often intricately personal mixture of medical, social, educational, economic, and home environmental problems. Weekly team meetings are held to accomplish this planning, report progress, and to coordinate activities. At such meetings, as well as in less formal more frequent contacts, team members also have the op-

portunity to plan to investigate and meet needs revealed by other case-finding mechanisms (other members of families under care, casual contacts, screening programs, and others). The low level of personal income, and limited capacity of such public programs as Medicaid and Medicare in Alabama has made financial support of care a serious problem. While needed drugs can be provided with Project funds, the only other source of care for those unable to pay is the increased capacity for care provided by team members, and the willingness of an individual physician or hospital to provide urgently needed care without compensation in specific cases.

Two years of planning, curriculum development, recruitment, and training have led to the placement of 45 health personnel, including clerical and evaluation workers, in the three major communities of the county. About 75% of those were county residents, many of whom were given full training under the Project and the local health department (health counselors, multipurpose aides, and environmentalists). Four Medex, products of the University's first Medex Program, begun in March, 1971, are presently working full time with Lawrence County physicians.

Acceptance by the community and consumers of these new kinds of personnel has not been the problem predicted. Both acceptance and the frequency and depth of need is demonstrated by the fact that all of the teams are continually stressed to keep up with planned activities.

Evaluation efforts are monitoring health status (as compared with a closely matched control county), changes in methods of providing care (such as task delegation), income production, vital statistics, hospital discharge statistics, etc. Results will not be clearly apparent until data has accumulated further, but changes are occurring, both related and unrelated to the Project. Community development and advocacy relationships are involved in new recreation programs and such educational efforts as cooking classes. At the same time, county efforts have led to a county-wide garbage pickup system, and plans are being made for a county-wide water system. Federally subsidized housing has undergone a sharp increase.

Although no changes of major dimensions are foreseen in less than a span of years, the Lawrence County Health Care Project, very much a project of and for Lawrence County residents, is an integral part of the community's determination to have these beneficial changes occur.

MULTI-COUNTY APPROACH is a project originally sponsored by the Pennsylvania Department of Health and funded through the USPHS in a five-county area in rural Pennsylvania. Project aims were: (1) to develop local community organization in order to identify and coordinate existing health services and plan and implement supplementary programs; (2) to demonstrate local community participation in health education; and (3) to test a demonstration system in the delivery of

health services to rural areas, based on self-supportive community action.

In August, 1967, a community organization specialist, a behavioral scientist and a secretary were secured to collect and assemble data on health resources and utilization within the five-county area. Backed up by consultants from the central office of the Pennsylvania Department of Health, this field staff conducted interviews in approximately 1,000 households, randomly selected to provide a representative sample of the population of the project area. Survey data was analyzed to determine knowledge of, attitudes toward, and utilization of, local health resources.

The population of the five-county area is 236,400, with the bulk of the labor force in manufacturing or service industries. There are six general hospitals in the area with 104 extended care beds. A total of 37 ambulances operate in the area. Three of the five counties have limited home health services. A variety of clinics for preventive services are sponsored by the Department of Health. In 1966, there were 277 physicians in the area, 123 of them in Montour County where the Geisinger Medical Center is located.

Field staff research provided the stimulus for formation of a committee of local health leaders, including representatives of medical societies, hospitals, and nursing associations. This group provided information on local resources and major health needs, and as the project progressed it expanded informally to include related professionals, leaders and concerned citizens. This larger committee began to establish priorities for health planning in the area, to formulate recommendations and plan remedial steps, drawing largely on available resources.

In July, 1970, the Central Pennsylvania Health Council was established as an outgrowth of the demonstration project, and the project area was expanded to cover 11 counties, with a total population of 575,000. The Appalachian Regional Commission funded the Council for fiscal 1971, to work with communities in planning a region-wide primary health care delivery system, integrating existing services, projecting new facilities, locating additional resources, and coordinating local, state and federal government involvement.

To date, this cooperative effort has resulted in the creation of three health facilities. Five other components of a total regional system have been submitted for operational support under the ARC. Together, these eight facilities will comprise a coordinated system for delivery of primary health care throughout the region.

The Council uses three basic administrative modes in establishing primary health care (PHC) systems, based on need and compatability with existing resources: hospital-based; non-hospital based; and integrated (i.e., Primary Health Care Centers located within existing hospitals; PHC Centers staffed by paramedical teams under super-

vision of neighboring hospital staff; and PHC Centers staffed by paramedicals and supervised by local physicians). The project aims to provide a facility within a 30-minute travel radius of all consumers within the region.

Of the three facilities now in operation, two are non-hospital and one hospital-based. The Mountaintop Area Medical Center in Snowshoe resulted from efforts of the local Lions Club. With the only physician nearing retirement, the Lions realized it would be difficult to locate a new doctor who would work the same 15-hour day to care for 10,000 people spread over an area touching on three counties. They explored their options, then contacted the Central Pennsylvania Health Council for assistance. Their new facility now offers the services of a local physician and a dentist assigned by the National Health Service Corps. Other allied medical personnel, for screening, treatment, referral and 24-hour emergency coverage are also employed.

Working with Mountaintop and using the same general concept is the Penns Valley Area Health and Welfare Association in Spring Mills. Their new center has been funded by local individuals--8,700 people contributed over $80,000--and is staffed by two physicians from the National Health Service Corps and a dentist and other medical personnel recruited by the Association.

Divine Providence Hospital's center demonstrated the hospital-based mode of PHC delivery. It is administered through the existing hospital network, and developed as an extension of its emergency service. Four full-time physicians and five part-time physicians offer round-the-clock care.

Throughout the five-county area, community organization has led to the formation of auxillary groups and outreach teams which sponsor health education classes and clinics conducted by local organizations and support improvement of local services. The hospital-based center offers supplementary programs in preventive medicine, dietary counseling, direct referral for specialized treatment, and a mental health evaluation service. Two pre-pay health care programs have been established.

The remaining five components of the total regional system have been submitted for operational support under ARC's Section 202 Health Demonstration Program. They include three integrated facilities and two hospital-based. Together, these eight centers will complete the developmental phase of CPHC's regional primary health care delivery system.

CPHC, an ARC Health Demonstration Project, has recently been assigned a distinct but coterminous function as a State agency for Comprehensive Health Planning, 314 (b). It offers a model in regional research, planning and the integration of local resources and a variety of governmental funds.

RURAL HEALTH PROJECT, INC. Southern Monterey County, California, demonstrates that a group of private physicians, with the collaboration of the County Medical Society, can responsibly and efficiently conduct a program to provide comprehensive medical care to indigent patients. Under the Public Service Act, Title 314 (e), RHP, Inc., is an experimental project organizing indigent care while offering a base for comprehensive health planning at the local level.

The basic objective of the program is to provide comprehensive, high quality medical care -- a "one-door system" -- to all residents of the area. To this core of single-system health care delivery are attached a variety of services designed to meet the special needs of a large depressed portion of the population. Care is provided in the same facilities and by the same staff for all; only the payment mechanisms vary.

RHP, Inc., relates to its funding source through two significant groups: The Monterey County Medical Society, grantee for the Project, and the Southern Monterey County Medical Group is the principal provider of services. This arrangement demonstrates the possibilities for involvement and initiative on the part of local physicians and their professional organization.

The ten full-time physicians of the Southern Monterey County Medical Group are a private group practice covering general practice, surgery, pediatrics and radiology. A pediatric nurse practitioner, obstetrics nurse practitioner and physical therapist also give direct patient care in the Group. There is a visiting consultant staff of nine physicians and two psychiatric social workers for specialized services. The Group operates a major clinic in King City with a satellite office in a neighboring town. The George L. Mee Memorial Hospital and Pioneer Hacienda Nursing and Convalescent Home in King City collaborate in the Project for inpatient services and extended care. The Medical Society assists in ongoing service evaluation theough peer review.

The target area has 2,000 square miles with a population of about 22,000 with 3700 in King City. Nearly 25% of the population are below poverty guidelines and about 40% are considered poor.

Until recently, approximately 6,000 additional needy migrant workers entered the area from March to October, but agricultural mechanization has reduced that flow substantially and the Project's principal target is now local residents. Agriculture remains the area's primary source of income.

Physician services at the clinics, and laboratory and x-ray services at the hospital, are regularly offered from 9:00 a.m., to 5:30 p.m., weekdays and in the adjacent hospital emergency room manned by Group physicians for nights and weekends. During the summer, clinic evening hours are maintained. The only charges for services to lowest-income beneficiaries of the Project are a $1.00 fee, waived on request, per prescription filled and a part of the cost of normal deliveries. A recent co-pay program allows low income community residents above

poverty guidelines to receive services on a part-pay basis with the HEW grant assuming the balance of cost. About 8400 residents of the area are eligible for the RHP program.

Eligible patients receive treatment in the same manner as self-sustaining patients: They make appointments; are given a thorough medical evaluation; and establish a continuing relationship with a physician and other members of the health team. In this manner, not only is treatment for current medical problems provided, but the patient is also taught proper utilization of routine preventive care. Four station wagons and one small van transport patients from all sections of the Project area to the clinics and hospital when personal transportation is unavailable.

In addition to the medical services of physicians, the Project provides outreach community health services. Community health aides, selected from indigenous population, are trained "in house", certained through the State, and receive junior college credit for their studies. They act as health advocates, visit homes, and counsel on sanitation, food handling and preparation, nutrition, etc. Community health aides average 1,800 monthly contacts, public health nurses 200.

RHP, Inc., also provides dental services to grant patients, through participating dentists, who unlike member physicians, are salaried. The Project plan includes a research component, testing the feasibility of offering careers in the health field to members of indigent families (e.g., health outreach workers) and in the use of public health nurses and social welfare professionals to assure continuity and completeness of health care.

Together, the clinics, hospital, and RHP have a total of about 200 supporting (non-physician) staff members. The Project has been in operation since June 11, 1967.

MEDEX

In April, 1969, the University of Washington Medical School, in cooperation with the Washington State Medical Association's Education and Research Foundation, began its first program to prepare the now-familiar MEDEX for practice. The program was designed to train former medical corpsmen in civilian medical procedures so that they might extend the services of physicians. MEDEX was conceived not simply as a training program, but as a training and deployment program, filling specific existing openings in needy areas and relying heavily on participating physicians who request and help prepare trainee-corpsmen.

The purpose of the MEDEX program was to develop an extension of the physician, trained by and for a specific physician, who would work under his supervision and be available to help him 24 hours a day--a model of non-physicians extending primary care, transferable to rural

or urban settings. MEDEX trainees would spend three months in training at the University, then move to the office of a physician who would act as preceptor and employ him after 12 months of on-the-job training. Participating physicians, all in general practice, were familiar with the experience of military corpsmen, and had expressed a need for help in their medical practice. Special attention is paid to the selection of corpsmen, the matching of MEDEX and preceptors, psychological adaptation to the civilian medical scene, and the development of the MEDEX's self-image, identity and status. Based upon present experience, these areas are critical to the utilization of former military corpsmen in civilian settings.

Since the first MEDEX program began in 1969, it has been replicated by five more medical schools. One hundred ninety-nine MEDEX are in the field, some still doing preceptorships, working in 24 states. MEDEX is still expanding: three to four more programs are projected for 1972. Most MEDEX, not surprisingly, work in rural communities where they are sharply boosting physician productivity and morale. They seem to have gained the respect of nurses and other staff in physicians' offices and hospitals and are very well accepted by the patients.

MEDEX is not a radical innovation in health manpower, nor is it a new training program being developed within a university. It is a joint project of potential users of the MEDEX personnel and the developers-trainers-evaluators of the MEDEX program. And it is an overdue effort to pull together existing resources to meet growing needs in community health.

COMMUNITY MEDICAL SERVICES Medical Society of State of New York The Community Medical Services project is similar to Central Pennsylvania's (page 23) in that it was founded upon an exhaustive survey of the needs, resources and desires of an area, and sought to coordinate existing and projected facilities, personnel and resources into a comprehensively planned regional system of health care services. It differs, however, in some methodology and in the primary role taken by the State Medical Society.

Impetus for the project came from the Committee on Rural Medical Service of the Medical Society of State of New York, which undertook a pilot study in three rural areas, with 30,000 residents, which lacked physicians. Community Medical Services, research of the Society's Medical Services Committee, executed the study designed to determine the causes and extent of the physician shortage in rural areas and to offer insights into the characteristics, attitudes and wishes of both physicians and residents concerning medical care.

Study results were to be used in planning medical centers which could serve "doctorless" regions. The centers would embrace a geographical area of possibly four or five adjoining communities whose

combined population base could support quality medical care (approximately 10,000-30,000). Each center would be staffed by physicians from the surrounding area on a part-time basis until permanent physicians could be obtained. The communities would provide well-equipped facilities and personnel, and these centers would be linked to hospitals and other medical centers in nearby cities where physicians could have staff appointments.

Project surveys were addressed to three groups in the pilot areas: physicians, citizens' committees and organizations, and the lay public. They revealed that physician age levels were approaching a critical point--in another 10 years medical coverage would be dangerously low unless the trend toward outmigration was reversed (unlikely); that preventive medicine, if judged by an annual medical examination, was lacking; that while area physicians did not generally engage in group practice, they were open to some type of combined practice; and that rural residents, although willing to travel 30 miles or more to obtain medical care, were distressed at being forced to travel such distances for minor or emergency treatment. Community residents expressed great concern over the lack of medical resources and cooperated willingly with the project. Although they wanted their own physician, they realized that this was an almost impossible aspiration and were willing to consider alternatives, such as cooperating with other towns to construct a "crossroads medical center."

A study of travel patterns was basic to the development of such a center, and a model evolved: small medical centers placed in areas chosen to offer areawide coverage, supported jointly by communities in the vicinity, and offering 24-hour emergency service, diagnostic facilities, educational programs, and referral to more distant medical facilities. In the three areas investigated, medical and hospital coverage by private insurance was very high (91 per cent), suggesting that a fee-for-service model could be self-sustaining. In less affluent areas, the same model could be used with a different method of payment, e.g., through state or federal coverage of necessary fees, or by physicians working on salary.

The concept developed by Community Medical Services is now in operation in three locations and three states: In Old Forge, an Adirondack community 50 miles from Utica with relatively high income and educational levels, a clinic building staffed by three physicians services 25,000 people. The clinic offers emergency care and ambulances, and is equipped for full diagnosis. Ambulances are manned by the VFD, trained by the center. Most patients pay a full fee for service, and a community fund provides for those who cannot. Clinic physicians can refer patients to a Utica hospital, and continuing education is available in Syracuse. The area still lacks health education services for the public, and the people feel that private cars and the ambulance service do not meet transportation needs in their mountainous area. The community is also planning for an extended care unit and a heliport.

A second operation, in Cayuga County, serves a less wealthy population and therefore faces additional problems. Two public health physicians are practicing in offices in the school; patients pay a fee for service, but the government pays physician salaries. The community plans to build a clinic facility but does not yet have funds.

Finally, in St. Lawrence County near Canton, community residents are still in the planning stages for their area services. The 35,000 people of the region have good income, with 96 per cent insurance coverage, and are served by two physicians. They hope to establish a facility in Canton, and are studying the possibilities of training medical technicians in cooperation with the four small colleges in the area.

Community Medical Services' concept relies heavily on local organization, the practical appraisal of local resources and patterns, and the careful consideration of lay and professional needs and concerns. It offers a model of regional cooperation in the provision of medical services which may be adapted to serve other rural areas.

RURAL HEALTH ASSOCIATES West Central Maine RHA, in quick summary, is a pilot prepayment health care services plan, testing the feasibility of delivering comprehensive preventive, educational and crisis health services to a rural population through a single delivery system supported by a variety of payment mechanisms, principally prepayment.

West Central Maine comprises about 1,900 square miles of timberland, mountains and farmland. Paper making is the largest employer among the 30,000 residents, but pay is low. Agriculture, once a major industry, has petered out, and unemployment is high. More than half the families in the area earn less than $5,000 a year and half of those earn less than $3,000. Fourteen physicians serve the region, backed up by a 50-bed community hospital in the largest town (population 6,000). Several of the physicians face retirement (without replacement) and the hospital facilities fail to meet Hill-Burton standards. In this context, a comprehensive health plan would have to take into consideration the substantial health needs of the area; the special financing problems of low-income people; and the conditions and services necessary to attract professional medical personnel.

RHA's development began in the Spring of 1969 with research into the health needs of the region. With this as background, a staff of the Franklin County Community Action Council began working with local physicians and citizens to secure planning funds for comprehensive health care services. In October, 1970, an OEO grant made it possible to hire a small planning staff.

An advisory board was formed to assist the planning staff. It included about 50 per cent consumers, as well as representatives of health care delivery organizations, business and labor leaders and other citizens. After reviewing State statutes and regional needs, the

group chose a nonprofit health services corporation as the most effective vehicle for bringing about the desired programs. RHA was incorporated in August, 1971, and sought and received OEO funding for startup.

RHA's program reflects six fundamental decisions based on area needs and the organizing group's philosophy:

(1) Health care should be provided through a single system of delivery, a "one door" policy for all consumers.

(2) The system should operate (and physicians be paid) to keep people well. Therefore, RHA chose to develop a prepayment program. Recognizing that some people would not accept the notion, they provided that services could be offered to nonmembers on a fee-for-service basis, and these monies utilized for further development of services.

(3) An increase in out-patient services is essential to an overall reduction of health care costs. However, in a rural area it would be both physically and financially harmful to centralize services exclusively. Thus RHA decided to establish ambulatory care centers in outlying areas, as well as an ambulatory center attached to the existing hospital.

(4) If a rural health care system is to be of any service, communications barriers must be overcome. RHA plans to develop, in conjunction with the University of Maine and the local CAP agency, a telecommunications system which can be used not only for consultation on immediate health problems but also as a health education tool.

(5) To enhance the efficiency of the system, allied health personnel will be trained to man the ambulatory centers when physicians are not available and to relieve physicians of routine tasks. The priority placed on preventive health care leads logically to formulation of health teams, training and utilizing residents and others as allied health personnel and outreach workers.

(6) To maximize and coordinate services to the area, RHA will work with other health providers and planners, e.g., the University of Maine; the Franklin area mental health agency, the Androscoggin Home Health Agency, within the region.

Each of these choices is reflected in the way RHA has started up its operations. For example, prepayment could never effectively raise the level of services while reducing costs if subscribers used services in the old way, pressured by lack of money and manpower and oriented toward crisis care. Therefore, the enrollment of families is a carefully developed part of the program's health education activities. Each family is enrolled personally and carefully informed about the nature of the program, stressing that they will not be allowed to accept crisis care only and outlining RHA's services and the family's responsibilities for health care.

As of the first quarter of 1972, 125 families (500+ individuals) have

been enrolled. History is personally taken and computer banked. Families can choose their own physician among the five on staff and work out health care plans together. A dental component is also operative, with the two dentists stressing preventive care.

RHA offers social services through 12 "family health workers." These are eara residents, trained by the local branch of the University of Maine to do case finding, family registration, and home health education. Transportation is still scarce--the project has two minibuses and provides emergency transportation, but most patients must rely on private cars. Since funding began in mid-1971, the ambulatory facility attached to the hospital has begun work and three other facilities, strategically located 17-45 miles from the hospital, are in varying stages of planning and startup. A telecommunications system will be in operation by late 1972, to link outlying clinics with physicians at the central facility.

A subsidiary, but essential, goal of RHA has been to provide conditions that will attract and hold physicans. To overcome the familiar drawbacks of rural practice, the project plans internal peer review, systematic record keeping and evaluation aided by the computer, plus required continuing medical education. Physicians will rotate duties so that each can spend the necessary time in regular, formal programs. They also project telecommunication access to specialists, medical centers and consultants, by expanding the system already designed.

AUTOMATED DEVICES Salem, Missouri is a relatively poor Ozark town with a median family income (1966) of $3,500, and the lowest physician/population ratio in the state: 65/100,000. Yet today, the patients of at least one physician are benefiting from the facilities and expertise of a university medical school some 130 miles away--through a sophisticated, office-based computer linkup. A cooperative project of the Missouri Regional Medical Program, the School of Medicine and the College of Engineering at the University of Missouri-Columbia, such computer use is not a full-fledged model of comprehensive health care delivery. But it is a way of testing the capacity of authomatic devices to enhance the delivery of services, and may in the future become an integral part of a variety of models.

The computer offers the physician two basic tools: first, linkage to other facilities; and second, increased in-house efficiency. Computer terminals and ordinary telephone lines link test equipment and clinic personnel in Salem with the IBM System/360 in Columbia. Eventually, a network of such computers could link all the medical outposts of a region with such a central facility.

Within the Salem clinic itself, the computer makes it possible for a patient to undergo a full battery of tests in less than three hours, and

can compile and bank data in an orderly, retrievable form. Included in the computer's files are sight, hearing, blood pressure, electrocardiogram, blood chemistry, urinalysis and X-ray results, as well as answers taken in an automated patient history acquisition routine. The physical examination can also be entered when completed by the physician.

The new technology expands clinic staff productivity, saves the patient time, and provides the physician with necessary reports and information before he sees the patient, thus saving his time and enhancing his effectiveness. The computer is also compatible with laboratory equipment and can offer the physician continuing medical education.

After a year-and-a-half in operation, the machine has proved "100 per cent" acceptable to patients, allied health personnel, and physicians. Clinic nurses are at home with its procedures, and patients appreciate the great reduction in time and travel which it offers. (In the past, comparable services were available 25-90 miles away and required two to three days for testing and results.) At present, the cost of the experiment is borne by the Missouri RMP, who have found it too early to segregate operational from developmental costs or project the actual cost of operation to physicians.

RMP plans to extend its experiment in two ways: first by establishing a no-physician satellite clinic 30 miles from Salem, linked by computer to the existing clinic. The second extension will be to establish the machine in the medical school's family practice clinic in Columbia, both as a practicing tool for work there and as the beginning of a possible state-or region-wide network of such facilites. As the program broadens, it is hoped, an exponential advantage will accrue, with practicing physicians and no-physician clinics serviced by information and consultation. Referrals will then be more productive too: for example, a physician might find it necessary to send a patient to Columbia for surgery. The Columbia physicians would have computer access to the patient's history, and the referring physician would have similar access to records of treatment and response.

* * * *

Another example of sophisticated technical contribution to rural health care delivery was the Physician-Monitored Remote Area Health Program, a proposal developed by the State of New Mexico with input from the NASA Manned Spacecraft Center. This model would combine instrumentation and data-handling techniques developed for aerospace medicine with the use of allied health personnel to provide health care to residents of remote areas under centralized physician supervision.

The proposal called for a system of facilities equipped with sensors like those used on astronauts in space to transmit medical information to physicians on the ground. Scattered through remote areas, these facilities would be staffed by paraprofessionals and equipped with

biomedical sensors and other equipment. Heartbeat, respiration, blood pressure and other information would be transmitted to a computer-controlled center where a physician could monitor symptoms and advise allied health personnel about treatment, by radio or television. Mobile units could service the facilities and computers would record and store medical histories and other information.

If a patient became ill, he could travel to the nearest remote center, if able, or be called upon by a mobile unit. Sensors could be attached to the patient and his life signs transmitted to the control center. The physician on duty at the control center would request the patient's file from the computer and the nurse and patient could talk to the physician by radio. The physician could then prescribe medication or other treatment until the patient could be removed to a hospital.

The proposal, developed for the southwest corner of the State (50,000 sq. mi., 95,000 residents, fewer than 30 physicians), was placed before the New Mexico legislature for funding. It was defeated as too expensive for the State at that time, but offers sophisticated, potentially useful, ideas for the future.

Where Do We Go From Here

These few models represent a great range of situations, needs and responses. Common themes evolve: community involvement--in research, uncovering needs, planning solutions, and cooperation in implementation; regional planning; and the use of physician-extensions, whether MEDEX, nurse practitioners, or automated devices. The medical profession's concept of its role may be shifting, as evidenced by the priority frequently placed on preventive care, community health education, and the use of family health counselors.

The fundamental problem that emerges from this great variety of rural settings is isolation: the isolation of consumers from providers and services, and the isolation of physicians from the facilities and resources--including the stimulation of peers--they need to maintain a satisfying and satisfactory practice. Even when per capita income is high and third party coverage widespread, new physicians are reluctant to take up practice in areas that lack auxiliary services such as hospitals and nursing homes and access to specialized facilities. Badly needed specialists hesitate to accept rural posts because they fear that their skills will be vitiated by too much general practice. In low income areas, these problems are exacerbated and new ones added.

Short of some cataclysmic reversal in living and employment patterns, we are certain to remain an urban nation. Thus rural health needs will have to be met by accomodation to new health care delivery systems, developed by rural residents and concerned professionals to serve the unique requirements of each area and its people. Some new resources are emerging to assist in that process.

NEW RESOURCES

National Health Service Corps The Corps marks the first federal effort to provide Public Health Service physicians, dentists, nurses and other health professionals to areas--urban and rural--where other health resources are inadequate. Established by the Emergency Health Personnel Act of 1970, the Corps is intended not only to meet the im-

mediate "emergency" manpower needs of an area, but also to help communites develop self-sustaining solutions to their local health problems.

By law, the Corps program depends upon the participation of many people: the need for health personnel must be certified by the local medical or dental society, the State equivalent society, and the local governement for the area concerned. In addition, the State and area-wide comprehensive health planning agencies, the Regional Medical Program for the area, independent health practitioners, and consumers must assist in program development. While these requirements may seem cumbersome, they do serve to assure solid community support for health care programs.

Corps assignees are salaried members of the Public Health Service, but they charge fees for their services which are returned to the U.S. Treasury. Other financial arrangements--such as prepayment--can be made, and those who cannot pay will not be refused service, but the goal of the fee-for-service requirement is twofold: (1) to emphasize that the Corps is not in an area to undercut existing health providors; and (2) to help build an economic base for an independent, post-Corps medical or dental practice.

While the Corps program is not intended solely for rural consumption, it is mandated by law to place a resident physician in every "doctorless" county of the Nation. About 120 counties fit that description, and almost all of them are rural. Thus, the NHSC may soon become a primary source for much-needed manpower, research, and guidelines for rural health development.

Regulations covering NHSC operations were published in the Federal Register on December 16, 1971. For application forms or a copy of the Interim Guide for Applicant Communities, write H. McDonald Rimple, MD, Director, NHSC, DHEW, 5600 Fisher's Lane, Rockville, Md. 20852.

USDA: Rural Development Rural Development is not a new agency of government. Rather it is a movement which encourages local citizens to identify their problems, assets and needs, and then encourages them to develop action programs which will both improve the environment and expand the opportunities for productive employment. The U.S. Department of Agriculture offers educational, organizational and financial assistance which may not be available locally.

Programs of various USDA agencies, such as Extension, Soil Conservation Service, Farmers Home Administration, Farm Cooperative Service and the Rural Electrification Administration, as well as other agencies of the federal government, all contribute to assisting State and local Rural Development programs. Attention is given to improving housing, delivery of family and community health services, education, employment and recreational opportunities, especially in areas of sparse population such as the Great Plains, in an effort to reduce

the urban migration which has led 78 per cent of our population to live on two per cent of the land.

While Rural Development represents a cooperative effort among various agencies, USDA's Extension Service will be, perhaps, the most visible agent at the "grassroots" level. Extension, the main public educational outreach of land-grant universities, has demonstrated its effectiveness in some areas which contribute to better health, including nutrition, sanitation, homemaking, and pest control. Extension has not been involved directly in issues of health care delivery or access to the system, because it considered these the exclusive domain of the formal health care delivery systems.

However, given the present critical demand for health care, the need for a major effort directed at consumer health education, and the unique capacities of Extension, the need for cooperation between health and Extension personnel is apparent. To that end, plans are underway for selected land-grant universities to implement programs in health education which can be used by university Extension divisions and medical schools to demonstrate:

(1) Greater concern for personal health.

(2) Positive steps to prevent illness; to prevent progression of minor illnesses; and to prevent dependency through rehabilitation following catastrophic illness.

(3) A better understanding of the changing health care delivery system and how to obtain access to it most effectively and efficiently.

(4) How and what one may accomplish by self-help without or prior to calling on the formal health care delivery system.

For further information on Rural Development or Extension programs, write the Federal Extension Service, U.S. Department of Agriculture, Washington D.C. 20250.

Medical School Experimentation Among the many innovations in medical school training are three which relate to the shortage of physicians in rural areas:

(1) The Creighton (Nebraska) University's Family Practice Program offers flying instruction to all the University's hospital doctors, residents and interns who want to participate, on the theory that young doctors would be encouraged to practice in rural communities if they could overcome isolated circumstances. Contact: M.J. Haller, MD, Assistant Professor of Family Medicine, Creighton University, Omaha, Neb., 68131.

(2) At Wayne State University (Detroit, Mich.), medical students are making contracts with physician-short communities: the community provides a loan toward the student's medical education; he agrees to practice family medicine in the community for at least one year. The Michigan State Medical Society plans to guarantee the loan program, which was designed by two medical students. Experience indicates that once a young doctor has established in a community, he is

likely to remain there. Contact: Tony A. Doherty, Executive Director, Michigan Health Council, 712 Abbott Road, Box 1010, East Lansing, Mich., 48823.

(3) The University of Minnesota Medical School is sending third-year medical students into rural areas to work with practicing physicians there in hopes of interesting them in establishing their own rural practices. Each student is paid $10,000 for the year--$5,000 from the physician with whom he works, and $5,000 from a legislative grant. He receives on-the-job training from his physician and eventually is able to care for patients under supervision. It is expected that students will return to the University better prepared than most for their final year of academic study. As of 1972, 21 students are spending a full year in 19 rural communities. Contact: John West, MD, U. of Minn. Medical School, Minneapolis, Minn., 55455.

COMMUNITY INVOLVEMENT

This overview of developments in rural health care delivery clearly illustrates that the search for rural health manpower must generally be geared to an area-wide health care system. Nowhere can this be done better than in the small towns with which we are most concerned. They can identify their own nurses, active or retired, technicians, teachers who have health skills, or others who can be trained to perform relatively simple but nonetheless critical services. A nurse with special training or other specifically trained assistants can relieve the physician of many time-consuming professional activities and allow him to use his professional skills much more productively.

The key focus is on community consciousness. Individual consumers, professionals, and organizations will make the greatest investments in planning and support. It is essential that rural people and their leaders be represented on local health planning councils so that they can speak for their communities and ensure realistic planning. Particularly when programs are initiated, administered, or financed by outside personnel or agencies, genuine local participation is essential to gain community acceptance.

Community health councils can also become vehicles for implementation of parts of a comprehensive health program, particularly in organizing services such as emergency care and in health education.

CRITERIA FOR EVALUATION

In order to develop a program geared to local needs and resources, a community must assess the local situation. Logically, the process begins with an analysis of the local medcal service area. That area may

include several communities and towns, even several counties, depending upon the population density and trading patterns.

Next the health experiences and health needs of area residents must be examined and an inventory taken of the health manpower and facilities available, as well as health resources which may be called upon beyond the immediate area.

Finally, the community must consider how a proposed plan or model might relate to existing methods of health care delivery: Will it take full advantage of what resources are available? Will it have significant effect on the documented health needs of the area? Will its entry be perceived as competitive or cooperative? Will it be acceptable to area residents?

An ideal community health system would meet all of the following standards:

(1) Efficient and economical use of physicians and allied health personnel.

(2) Adequate facilities in the medical service area--hospitals, laboratories, extended care facilities, and nursing homes.

(3) A design for delivery of services that is compatible with community patterns, while making most effective use of personnel and facilities.

(4) Adequate funds or sound financing mechanisms, to permit construction of needed facilities and utilization of services.

(5) Community recognition of the value of the project, and support in securing the necessary facilities and personnel.

(6) Ongoing evaluation at every stage of development.

UTILIZATION OF RESOURCES

The principal resource of any area is its people, and the ultimate goal of any program is to raise the level of human well being. Remedial health services are indispensable to the pursuit of that goal. But in the long run, self-maintenance of health and prevention of disease are at least as necessary.

Education for health, then, is a fundamental aspect of community health services and is basic to every health program. The objectives of health education are to interest each individual in his own health and the means to improve it, to teach him where health services are available, to motivate him to use these services intelligently, and to teach him what aspects of personal behavior and the environment will affect his health. In rural areas particularly, environmental impact on health is critical and apparent. Community health education can lead to community organization around such problems as adequate sanitation and improved water supplies.

The widespread concern about health manpower has extended beyond

that of the growing need for physicians. We are now equally concerned with the preparation and effective use of professions and services that support the physician in providing health care. A nucleus of community people can provide valuable assistance to enhance the physician's effectiveness--as physician's assistants, community health workers, environmentalists, and in a host of other capacities.

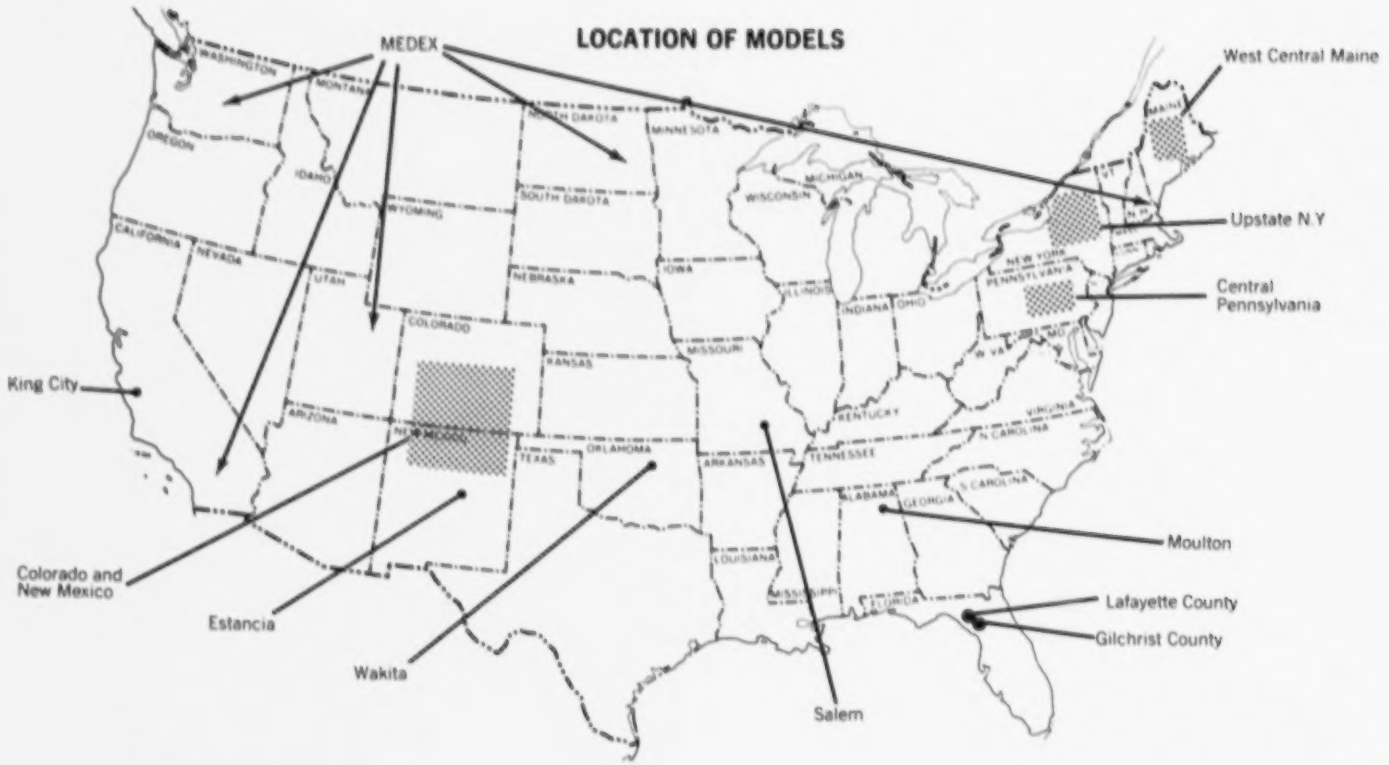
In conclusion we can say that the way for each person to attain the goal of optimum personal health care lies within his community and its resources. Ultimately, the power is found within the people themselves. As Thomas Jefferson said, "I know no safe depository of the ultimate powers of society but the people themselves; and, if we think them not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them, but to inform their discretion by education."

SUMMARY OF MODELS

Plan	Sponsor	Location	Description	Contact Person
Solo Practice	Individual physician	Nationwide	Individual physician carries on medical care for his patients.	
Community Health Program	University of Florida, College of Medicine, community advisory cmte.	Lafayette County, Florida	Medical and nursing students with resident deliver health services under supervision of College of Medicine.	Richard C. Reynolds, MD Professor and Chairman Dept. of Comm. Health and Family Medicine Univ. of Florida College of Medicine Gainesville, Florida 32601
		Gilchrist County, Florida	Use of the physicians' assistant under physician supervision is being tested.	Richard A. Henry, MD Asst. Professor of Medicine
Oklahoma's Project Responsibility	University of Oklahoma Medical Center, state medical society, and local citizens	Wakita, Oklahoma	State-wide program with pilot project in rural Wakita.	Thomas N. Lynn, Jr., MD Dept. of Community Health Univ. of Okla. Health Services Center 800 N.E. 13th Street Oklahoma City, Oklahoma 73104
Hope Medical Center	University of New Mexico School of Medicine, RMP, Sears, and local community	Estancia, New Mexico	Nurse practitioner specially trained delivers services under direct supervision of School of Medicine.	Robert Oseasohn, MD Associate Dean Univ. of Texas at Houston School of Public Health Houston, Texas 77025
Presbyterian Medical Services	PMS Group Medical Practice, OEO, RMP, Four Corners Regional Commission and residents	New Mexico and Colorado	Own and/or administrate two rural hospitals, six outpatient clinics and three nursing outposts. Aim for comprehensive regional system.	Jay F. Harris, MD, Director Presbyterian Medical Services 207 Shelby Street Santa Fe, New Mexico 87501
Lawrence County Health Care Project	Lawrence County Hospital Assn.	Moulton, Alabama	Delivery of comprehensive health care services through team approach.	Project Director Lawrence County Health Care Project P.O. Box 716 Moulton, Alabama 35650

Multi-County Approach	Central Pennsylvania Health Council and local medical service area	Eleven county area in central Pennsylvania	Develop community organization, involve local groups, and design local health care delivery systems.	Trin F. Dumlao Central Pennsylvania Health Council "Timberhaven" RFD #1' Lewisburg, Pennsylvania 17837
Rural Health Project	Monterey County Medical Society, Southern Monterey County Medical Group, Rural Health Project, Inc., and HEW	King City, California	Provides comprehensive medical care to all residents including migrant farm workers.	Noel Guillozet, MD 743 Broadway King City, California 93930
MEDEX	University of Washington School of Medicine and WSMA	Washington State	Train returning corpsmen to serve as physician's assistants (Medex).	Richard A. Smith, MD MEDEX 444 N.E. Ravenna Blvd. Seattle, Washington 98115
	Dartmouth Medical School	New Hampshire		
	University of North Dakota School of Medicine	North Dakota		
	University of Utah College of Medicine	Utah		
	Charles R. Drew Postgraduate Medical School, Los Angeles,	California		
Community Medical Services	State medical society's Committee on Rural Medical Service and local citizens	Rural counties in Upstate New York	Establishes and staffs medical centers in "cross-roads" locations.	Edward C. Hughes, MD 325 University Avenue Syracuse, New York 13210

Plan	Sponsor	Location	Description	Contact Person
Rural Health Associates	University of Maine, OEO, Rural Health Associates, HSMHA, and community groups	West Central Maine	Comprehensive medical care with central hospital and satellite clinics.	David C. Dixon, MD Medical Director Rural Health Associates Farmington, Maine 04938
Automated Devices	Missouri RMP, University of Missouri School of Medicine, Columbia	Salem, Missouri	IBM System/360 computer links rural physician with university medical center and facilitates improved local testing and records.	Warren P. Sights, MD Missouri RMP 406 Turner, Lewis Hall Columbia, Missouri 65201


LOCATION OF MODELS
MEDEX
West Central Maine
Upstate N.Y
Central Pennsylvania
King City
Colorado and New Mexico
Estancia
Wakita
Salem
Moulton
Lafayette County
Gilchrist County
WASHINGTON
OREGON
CALIFORNIA
NEVADA
IDAHO
MONTANA
WYOMING
UTAH
ARIZONA
COLORADO
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
S CAROLINA
N CAROLINA
VIRGINIA
W VA
PENNSYLVANIA
NEW YORK
MAINE